SMOOTH TECHNOLOGY

INTEGREX i-100 BARTAC SERIES

100 BARTAC-S
100 BARTAC-ST

Mazak

Advanced features of the Mazak SmoothX CNC

- Touch screen operation
  —Operate similar to your smart phone / tablet
- PC with Windows 8® embedded OS
- Fastest CNC in the world
  —Latest hardware and software for unprecedented speed and precision
- High precision machining of complex contours at high speed feedrates
- Smooth user graphical interface and support functions for unsurpassed ease of operation
- Easily configure machine parameters for different workpiece materials and applications requirements
- MT Connect ® ready —Convenient networking

Advanced tactics for bar work machining

Compact multi-tasking machine for bar material machining

INTEGREX i-100 BARTAC SERIES

High-productivity machining of large bar material up to ø102 mm (ø4.02") / □70 mm (□2.76") with incomparable flexibility

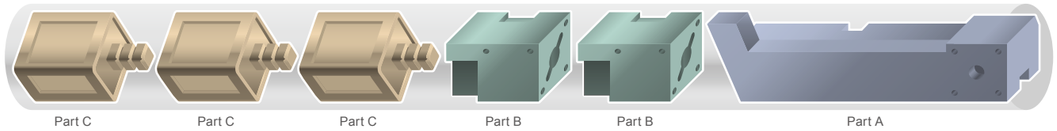
INTEGREX i-100 BARTAC-ST
Shown with optional bar loader, unloader and status light

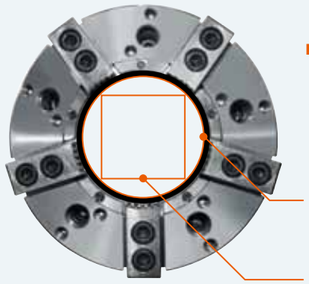
- Complete multiple workpieces from the same diameter material in one machine
- Finished workpieces are automatically unloaded by unloader and placed on output conveyor
- INTELLIGENT BAR LOADER SYSTEM automatically decides optimum machining order for minimum material remnant
- Thanks to automatic material positioning, a work stopper is not required

Higher Productivity

Compact machine with automation for large diameter bar materials

High-productivity machining of large bar material up to ø102 mm (ø4.02”) / □70 mm (□2.76”) with incomparable flexibility





■INTEGREX i-100 BARTAC 8" 5-jaw chuck

Spindle bore **ø112 mm(ø4.41”)**

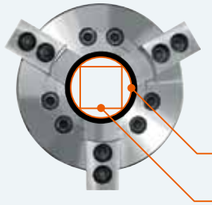
Max. bar diameter

Round material **ø102 mm (ø4.02”)**

Square material **□70 mm (□2.76”)**

Max. bar length

ø102 mm (ø4.02”) × L1200 mm (47.24”)



■Other multi-tasking machine 6" 3-jaw chuck

Spindle bore ø61 mm(ø2.40”)

Max. bar diameter

Round material ø51 mm(ø2.01”)

Square mate □35 mm(□1.38”)

Max. bar length

ø51 mm (ø2.01”) × L1000 mm (39.37”)

Floor space for ø102 mm (ø4.02”) bar material is 58% smaller than comparable systems

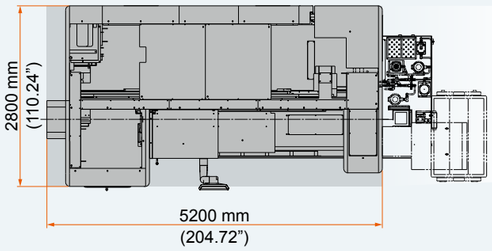
■Other multi-tasking machine
Bar work capacity ø102 mm (ø4.02”)

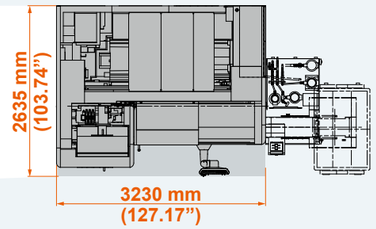
14.56 m² (156.7 ft²)

42% reduction

■INTEGREX i-100 BARTAC-S
Bar work capacity ø102 mm (ø4.02”)

8.51 m² (91.6 ft²)

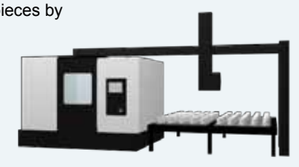




Provides higher performance with minimum investment

Other systems for ø100 mm (ø3.94”) material

■Multi-tasking machine with 6" chuck + Gantry robot
Automatic loading / unloading of chuck workpieces by gantry robot



■Multi-tasking machine with 12" chuck + bar feeder
Large multi-tasking machine equipped with bar feeder

■INTEGREX i-100 BARTAC

Lower initial cost
Floor space reduced
Improved ease of operation

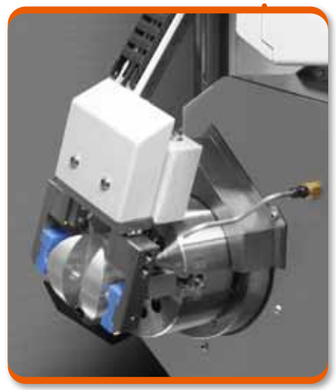
Higher Productivity

Bar loader / unloader / work conveyor

Shown with optional 72 tool magazine, bar loader, unloader and status light

Bar loader OPTION

Bar loader specifications (QUICK LOAD SERVO III MI)	
Min. bar diameter	ø6 mm (ø0.24")
Max. bar diameter	ø102 mm (ø4.02")
Min. bar length	300 mm (11.81")
Max. bar length	1200 mm (47.24")
Weight	80 kg (176.37 lbs)
Max. material storage weight	800 kg (1763.70 lbs)



Unloader (inside machine) OPTION

Unloader specifications	
Max. workpiece size	ø102 mm × L150 mm (ø4.02" × 5.91")
Hand jaw stroke	ø100 mm (ø3.94")
Hand jaws gripping range	ø30 mm ~ ø102 mm (ø1.18" ~ ø4.02")
Max. workpiece weight	5 kg (11.02 lbs)

Work output conveyor OPTION

Bar Material Supply Control

INTELLIGENT BAR LOADER SYSTEM

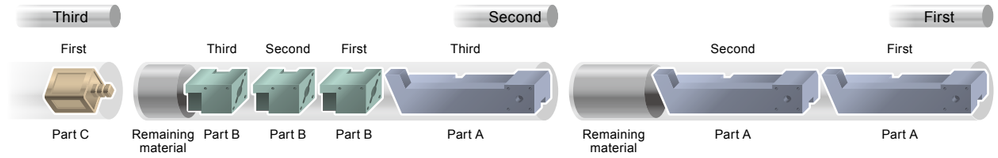
IBL+

Minimized bar requirement

Automatically sequences workpiece machining for minimum left-over bar material.
Assume machining requirements: Part A: 3 Part B: 3 Part C: 1

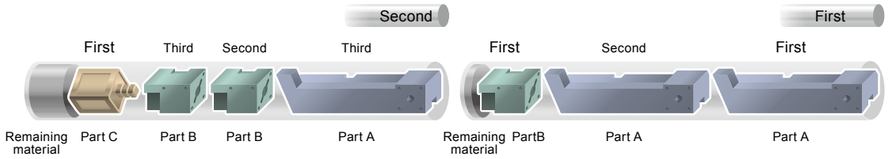
■Previous system

3 of part A are machined, then 3 of part B are machined in sequence- part C will be machined from next piece of bar material.



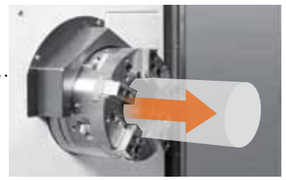
■INTEGREX i-100 BARTAC

Automatic selection of workpieces to be machined for minimum material remnant.



Automatic material positioning

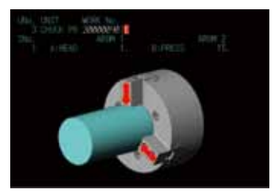
Bar feed amount is controlled by servo by receiving information for workpiece length from the CNC system. Positioning time for bar material is reduced as work stopper and special programming is not necessary thanks to the automatic bar positioning function.



Chuck clamping pressure program management function OPTION

Automation for a large variety of workpieces by changing chuck pressure supply by program.
This function helps not only changing the set chuck pressure per workpiece but also maintaining the same chuck pressure even though changing the product lot thanks to program pressure management.

Chuck pressure gauge shown on the CNC panel display. Pressure can be commanded in 0.1MPA.



Chuck pressure can be commanded either by MAZATROL programming or EIA.

MAZATROL CNC System

Intuitive operation by touch panel

Scaling / rotation (3D) on the screen can be easily done by fingertip pinching or swiping.

- Current process display.
- By touching menu icons, the screen is quickly changed to other process displays.
- Shortcuts can be touched in each process display for additional screen displays.
- Shortcuts to Smooth APPs Manager.

New interface with touch operation ensures convenient data processing —programming, confirmation, editing and tool data registration

Process home screens

Five different home process screens — each home screen displays the appropriate data in an easy-to-understand manner. Icons can be touched in each process display for additional screen displays.

Programming

Tool data

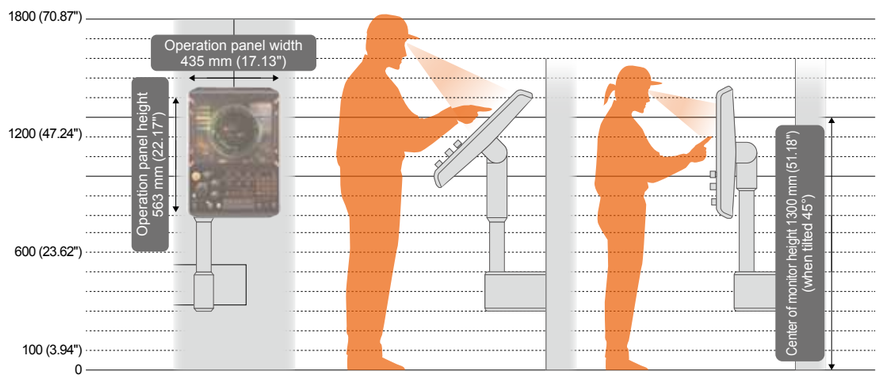
Set up

Machining

Maintenance

Touch panel adjustable to be comfortable for all operators

The tilting operation panel allows optimum positioning of the touch panel for any height operator to ensure ease of operation.



QUICK EIA

Program, process list and 3D tool path display are linked to each other. Visible search on touch screen can reduce the time for program checking.

QUICK MAZATROL

MAZATROL program, unit list and 3D workpiece shape are linked to each other. After defining a machining unit in a MAZATROL program, the 3D shape is immediately displayed to easily and quickly check for any programming error.

Intelligent Machine

INTELLIGENT MACHINE®

Yamazaki Mazak has developed a variety of functions for the improvement of productivity, high accuracy machining and operator support. A variety of unique technologies has been developed that incorporate the expertise of experienced machine operators that realizes unsurpassed productivity and higher accuracy machining.

Advanced Intelligent+ Functions

A variety of Intelligent+ Functions provides incomparable operator support exceptional ease of operation and the optimum machine efficiency.

Set up

IBL+

Bar Material Supply Control

INTELLIGENT BAR LOADER SYSTEM

Scheduling which determines machining sequence for minimum unused bar remnant. Bar material is automatically positioned by the loader eliminating the requirement of a work stopper resulting in faster cycle times.

ISS+

Machine Interference Prevention

INTELLIGENT SAFETY SHIELD

When an operator manually moves the machine axes for setup, tool measurement or changing inserts, the CNC shows a synchronized 3D model on the display for checking machine interference. If any machine interference occurs, the machine motion automatically stops. This function is also effective during automatic operation.

MVA+

Verbal Message System

MAZAK VOICE ADVISER

Verbal support for machine setup and safe conditions confirmation.

Machining

SMC+

Convenient Parameter Setting and Fine Tuning Function

SMOOTH MACHINING CONFIGURATION

Machining time, finished surface smoothness and machining shape can be adjusted for improved productivity.

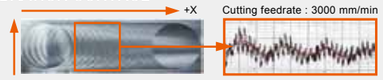
AVC

Minimized Vibration

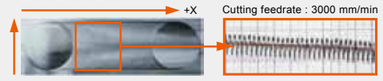
ACTIVE VIBRATION CONTROL

Machine vibration can be reduced to perform excellent machining accuracy and high-speed machining.

Without ACTIVE VIBRATION CONTROL



With ACTIVE VIBRATION CONTROL



VAC

Variable Acceleration Control Function

VARIABLE ACCELERATION CONTROL

Variable acceleration control is a new function which permits the faster acceleration capability of linear axes to be used whenever possible. The slower acceleration of the rotary axes is not used for all program commands, resulting in faster machining cycle times.

SCC

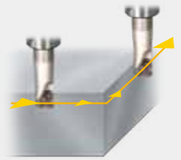
Seamless Corner Control

SMOOTH CORNER CONTROL

Improved finished surfaces and reduced cycle times by optimized acceleration / deceleration when machining corners.

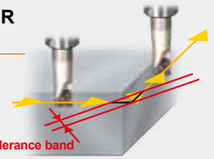
Other systems

Move to next command position after reaching current command position



SMOOTH CORNER CONTROL

Move to next command position within tolerance band



Maintenance

IPS+

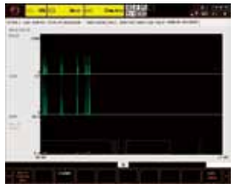
Comprehensive Spindle Monitoring

INTELLIGENT PERFORMANCE SPINDLE

The INTELLIGENT PERFORMANCE SPINDLE monitors a variety of properties such as temperature with sensors housed in the spindle and provides useful information to the operator. Thanks to this monitoring, production loss due to machine down time can be minimized.

▲ Condition check

Temperature as well as the motor load can be displayed.



▲ Running recorder

Operation status of milling spindle (rpm / motor load) can be recorded for up to one year.

IMS+

Comprehensive Maintenance Monitor

INTELLIGENT MAINTENANCE SUPPORT

Useful information for improved preventative maintenance to prevent unexpected machine downtime.

IMC+

High-Accuracy 5-Axis Calibration

INTELLIGENT MAZA-CHECK

Position misalignment and incline of the rotary axes can automatically be measured and compensated to realize high-accuracy 5-axis machining. The centers of rotation of both the C and B axes can be automatically measured and compensated.

ITS+

Heat Displacement Control

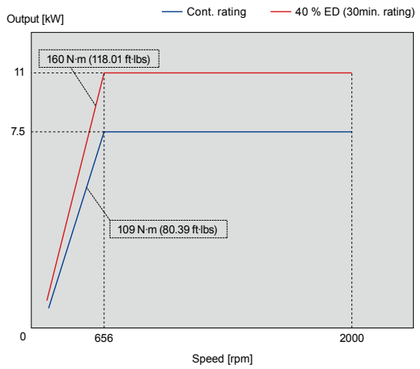
INTELLIGENT THERMAL SHIELD

The INTELLIGENT THERMAL SHIELD is an automatic compensation for room temperature changes, which realizes enhanced continuous machining accuracy. MAZAK has performed extensive testing in a variety of environments in a temperature controlled room and has used the results to develop a control system that automatically compensates for temperature changes in the machining area. Changes in the room temperature and compensation data are shown visually.

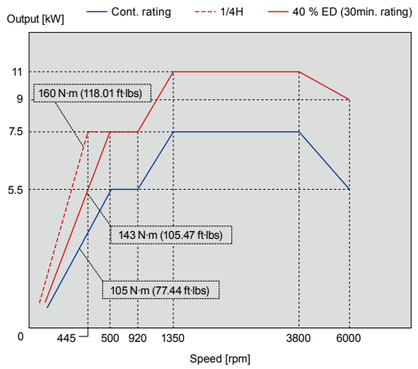
Temperature and compensation is displayed on screen. Operator can adjust compensation by looking at the data.

Output diagram

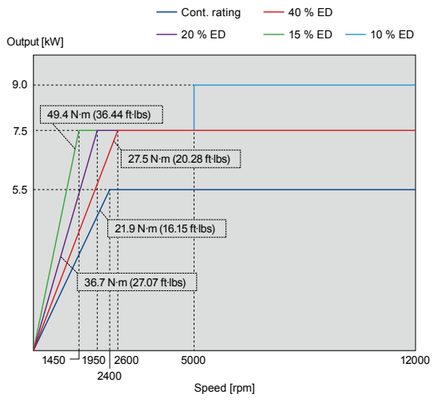
Main spindle



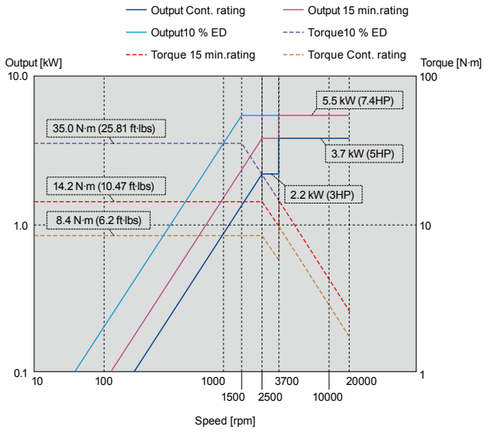
Second spindle



12000 rpm milling spindle

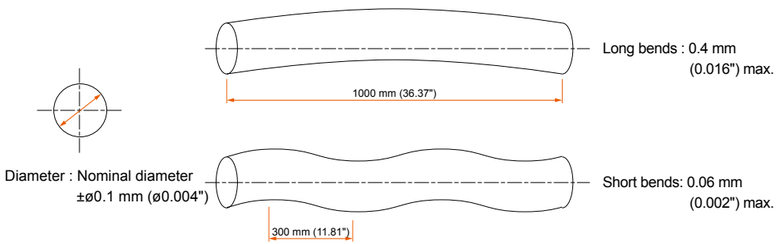


20000 rpm milling spindle (option)



Bar material requirements

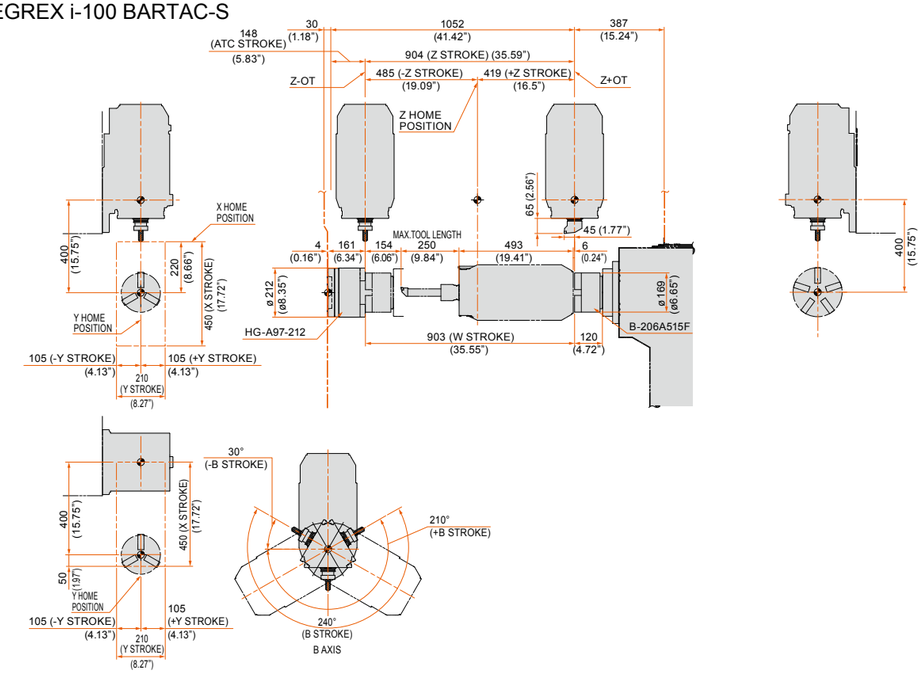
The use of cold drawn bar material with the diameter and camber tolerances as shown is recommended.



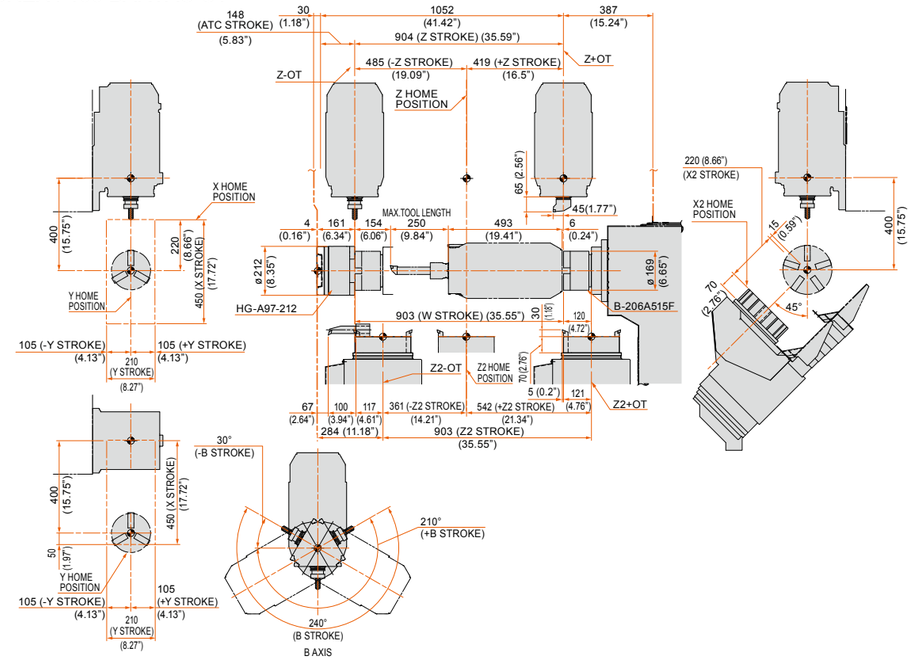
Stroke diagram

Unit : mm (inch)

INTEGREX i-100 BARTAC-S



INTEGREX i-100 BARTAC-ST



Standard Machine Specifications

		i-100 BARTAC-S	i-100 BARTAC-ST
Capacity	Max. swing / Swing over cross slide	ø530 mm (ø20.87")	
	Max. machining diameter (Upper turret)	ø500 mm (ø19.69") (Tool projecting length 65 mm (2.56"), in the V-position)	
	(Lower turret)	-	ø400 mm (ø15.75")
	Max. machining length*1	854 mm (33.62")	
	Max. bar work capacity	ø102 mm (ø4.02")	
Travel	X-axis travel	450 mm (17.72")	
	Z-axis travel	904 mm (35.59")	
	Y-axis travel	210 mm (8.27")	
	X2-axis travel (Lower turret)	-	220 mm (8.66")
	Z2-axis travel (Lower turret)	-	903 mm (35.55")
	B-axis travel	-30°~210°	
Main spindle	Chuck size	8"	
	Main spindle speed*1	2000 rpm	
	Main spindle nose	A2-8	
	Main spindle bore	ø112 mm (ø4.41")	
	Bearing ID	ø150 mm (ø5.91")	
	Minimum main spindle indexing increment	0.0001°	
Second spindle	Chuck size	6"	
	Second spindle speed*1	6000 rpm	
	Second spindle travel (W-axis)	903 mm (35.55")	
	Second spindle nose	A2-5	
	Second spindle bore	ø61 mm (ø2.40")	
	Bearing ID	ø90 mm (ø3.54")	
	Minimum second spindle indexing increment	0.001°	
Milling spindle	Milling spindle type	Single spindle turret with ATC	
	Milling spindle speed	12000 rpm	
	Max. milling spindle torque	49.4 Nm (36.44 ft · lbs)	
	Tool shank height	20 mm (0.79")	
	Boring bar shank diameter	ø32 mm (ø1.25")	
	B-axis minimum indexing increment	0.0001°	
Lower turret	Turret type	-	9 position drum turret
	Number of tools	-	9
	Tool shank height	-	20 mm (0.79")
	Boring bar shank diameter	-	ø32 mm (ø1.25")
	Turret indexing time	-	0.14 sec / 1 step
Feedrate	Rapid traverse rate: X-axis	40 m/min (1575 IPM)	
	Rapid traverse rate: Z-axis	40 m/min (1575 IPM)	
	Rapid traverse rate: Y-axis	40 m/min (1575 IPM)	
	Rapid traverse rate: X2-axis (Lower turret)	-	40 m/min (1575 IPM)
	Rapid traverse rate: Z2-axis (Lower turret)	-	40 m/min (1575 IPM)
	Rapid traverse rate: W-axis	30 m/min (1181 IPM)	
Automatic tool changer (ATC)	Tool shank*2	HSK-A63 (T63) (Option:CAPTO C6, KM63)	
	Tool storage capacity	36 tools	
	Max. tool diameter/length (from gauge line)	ø90 mm (ø3.54") (when adjacent pockets empty:ø130 mm (ø5.12")) / 250 mm (9.84")	
	Max. tool weight	5 kg (11 lbs)	
	Tool selection method	Random selection / shortest path	
Motors	Spindle motor (30 min. rating, 40 % ED / Cont. rating)	11 kW (15HP) / 7.5 kW (10HP)	
	Second spindle motor (30 min. rating, 40 % ED / Cont. rating)	11 kW (15HP) / 7.5 kW (10HP)	
	Milling spindle motor (40 % ED / Cont. rating)	7.5 kW (10 HP) / 5.5 kW (7.3 HP)	
Power requirement	Required power capacity (Cont. rating)	37.10 kVA	39.67 kVA
	Air source	0.5 MPa (73 PSI), 280 L/min (9.89 ft3/min)	
Coolant	Tank capacity*3	190 L (50 gal)	
Machine size	Machine height	2500 mm (98.43")	
	Floor space requirement	3230 mm × 2635 mm (127.17" × 103.74")	
	Weight (without oil pan)	9800 kg (21605 lbs)	10300 kg (22707 lbs)

*1 Spindle speed and maximum turning length depend on chuck specifications
*2 HSK A-63 '96 DIN not available
*3 270 L (71.33 gal) for Hinge type (option)

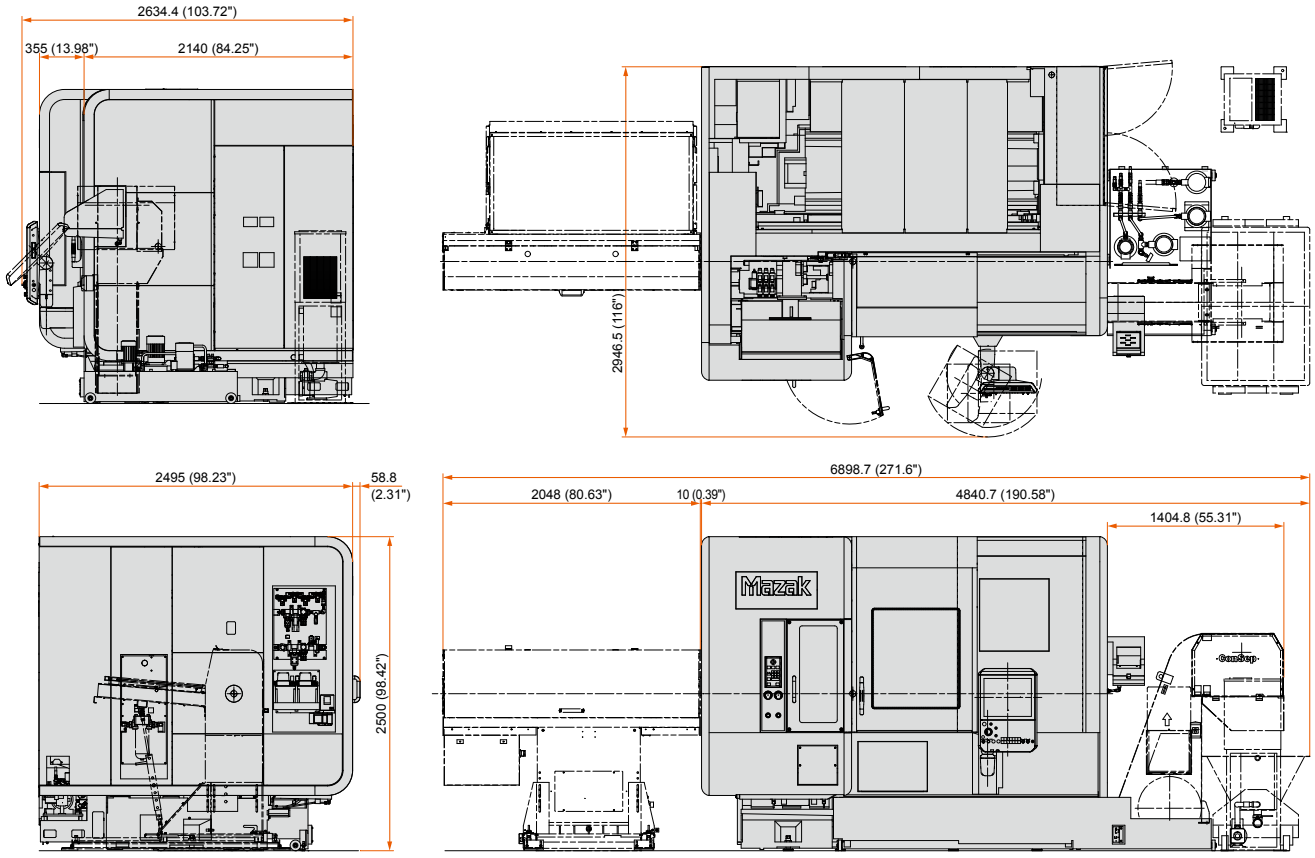
Standard and Optional Equipment

● : Standard ○ : Option — : N/A

		i-100 BARTAC-S	i-100 BARTAC-ST
Machine	Main spindle hydraulic chuck (8" through-hole / 5 jaws)	●	●
	Main spindle hydraulic chuck (collet chuck)	○	○
	Second spindle hydraulic chuck (6" through-hole chuck + non through-hole cylinder)	●	●
	Main spindle 0.0001°increment · C-axis control	●	●
	Second spindle 0.001° increment (without C-axis)	●	●
	Second spindle 0.0001°increment · C-axis control / synchronize function	○	○
	Y-axis control	●	●
	9D lower turret	—	●
	36 tool magazine	●	●
	72 tool magazine	○	○
	Milling spindle12000 rpm	●	●
	Milling spindle12000 rpm (CAPTO,KM)	○	○
	Milling spindle 20000 rpm (HSK only)	○	○
	Work light	●	●
	Status light (3 colors)	○	○
	Chuck double foot pedal switch	○	○
High Accuracy	Ball screw core cooling (X, Z-axes)	●	●
	Ball screw core cooling (Y-axis)	○	○
	Scale feedback (B-axis)	●	●
	Scale feedback (X / Y / Z-axes)	○	○
	Scale feedback (X2 / Z2-axes)	—	○
	Mazak monitoring system B (RMP60)	○	○
	Preparation for Mazak monitoring system B (RMP60)	○	○
	INTELLIGENT MAZA-CHECK	○	○
Automation	Tool eye (for upper turret / automatic)	○	○
	Tool eye (for lower turret /automatic)	—	○
	Auto power on / off + warm-up operation	●	●
	Automatic front door	○	○
	Automatic chuck jaws open / close (main / second spindle)	●	●
	Main spindle chuck jaws air blast	○	○
	Second spindle chuck jaws air blast	●	●
	Machining completion buzzer	○	○
	INTELLIGENT BAR LOADER (LNS QUICK LOAD SERVOIII MI + scheduler)	○	○
	Unloader (with work conveyor)	○	○
	Visual tool ID / data preparation	○	○
	Programmable chuck pressure	○	○
Coolant / Chip disposal	Chip conveyor	○	○
	Chip bucket	○	○
	Coolant through spindle 0.5 MPa (73 PSI) (for upper turret, simultaneous discharge with flood coolant)	●	●
	High pressure coolant through spindle 1.5 MPa (218 PSI) (for upper turret, simultaneous discharge through with flood coolant)	○	○
	High pressure coolant through spindle 3.5 MPa (508 PSI) (for upper turret, simultaneous discharge with flood coolant)	○	○
	Magnum coolant through spindle 7.0 MPa (1015 PSI) (for upper turret, simultaneous discharge with flood coolant)	○	○
	Coolant for lower turret 0.37 MPa (54 PSI)	—	●
	Shower coolant	○	○
	Main spindle chuck coolant & air blast	○	○
	Oil skimmer	○	○
	Mist collector	○	○
	Coolant temperature control	○	○
Safety equipment	Chuck jaws open / close check (main / second spindle)	●	●
	Overload detection system	○	○
	Current leakage circuit breaker	○	○
Other	Manual grease applicator	○	○
	Manuals	●	●
	Additional manuals	○	○

Machine Dimensions

Unit : mm (inch)



Note: The dimensions above include optional bar loader, unloader, work output conveyor and chip conveyor

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INTEGREX i-100 BARTAC SERIES SmoothX 16.03.450 R 99J194816E0